REMARKS

All the claims examined on the merits of this application have been rejected on substantive grounds. Applicants have considered the substantive ground of rejection imposed in the outstanding Official Action and respectfully submit that all the claims currently in this application are patentable thereover.

All seven claims examined on the merits in this application, Claims 1 and 4-9, have been rejected, under 35 U.S.C. § 103(a), as being unpatentable over Derwent-ACC-No. 2002-178025, published August 21, 2001, to Kim et al. taken in view of U.S. Patent 6,290,859 to Fleming et al.

The Official Action avers that Kim et al. shows the method substantially as claimed in Figures 1-10. It is unnecessary to reiterate the method steps allegedly taught by Kim et al. that overlap the process claimed in the present application. Suffice it to say, the Official Action admits that Kim et al. does not disclose a sulfuric acid to hydrogen peroxide volume ratio in the range of between about 6:1 and about 10:1. Furthermore, the Official Action admits that there is no disclosure in Kim et al. of this contact occurring at atmospheric pressure and a temperature of between about 70°C and about 90°C, critical limitations included in all the claims of the present application. In addition, the Official Action concedes that the volume ratio of sulfuric acid to hydrogen peroxide included in Claim 4, of about 8:1, is not disclosed by Kim et al. Similarly, the Official Action states that the limitations of Claims 4, 5, 6, 7 and 8 are not disclosed by Kim et al. Thus, the Official Action relies exclusively on the secondary reference, Fleming et al., for its alleged disclosure of the limitations clearly not disclosed, suggested or even hinted at by the Kim et al. abstract.

The Official Action states that Fleming et al. teaches a method of applying sulfuric acid and hydrogen peroxide to a semiconductor device substrate. That cleaning solution is recited, at Column 8, line 49 to Column 9, line 10, to be particularly useful in the practice of that invention if the solution is present in a sulfuric acid to hydrogen peroxide ratio of 5:1 at a temperature of 95°C for 0.5 to 10 minutes, preferably 5 minutes.

On the face of it, such a disclosure, when combined with Kim et al. would indeed make obvious the claims of the present application, assuming the ratio were a volume ratio, which is unstated. However, this is not the combined teaching of the two applied references. Although Fleming et al. may employ a cleaning solution which is within the range of that claimed in the present application, that cleaning solution is not applied to a semiconductor device which includes a tungsten gate conductor. As such, the disclosure in Fleming et al. is irrelevant to Claim 1 of the present application, from which Claims 4 to 9 all ultimately depend. All of these claims are directed to a process of removing residue from a CMOS device which includes a tungsten gate conductor which has been subject to stack etch/ion implantations and photoresist stripping steps. (Emphasis added).

Attention is directed to Fleming et al. at Column 10, lines 24-33. That portion of Fleming et al. clearly recites that the step of providing a tungsten coating, and thus forming a device which includes a tungsten gate conductor, occurs subsequent to the cleaning step. As such, no processing steps of the type claimed herein, and the type utilized by Kim et al., are taught by Fleming et al. This is so insofar as all cleaning operations occur prior to the formation of the tungsten gate conductor.

The above remarks establish the patentable nature of Claims 1 and 4-9 over the rejection of record. The Official Action recognizes that the disclosure of Kim et al. is inadequate to make obvious those claims. Thus, Fleming et al. is applied for its alleged disclosure of a sulfuric acid to hydrogen peroxide cleaning solution in a volume ratio within the range of that utilized in the claimed process of the present application. However, the remarks supra establish that no disclosure of a cleaning solution employed to remove residue from a CMOS device which includes a tungsten gate conductor which has been subjected to stack/etch implantations and photoresist stripping steps using a cleaning solution in the range of between about 6:1 and about 10:1, at a temperature of between about 70°C and about 90°C and atmospheric pressure, is known in the art. That such a solution provides excellent debris removal without impairment of CMOS device functionality due to tungsten etching is most unexpected and establishes the unobviousness of Claims 1 and 4-9 over the disclosure of Kim et al.

It is mentioned in passing that the applied rejection is of a type that has been criticized by the Federal Circuit. The CAFC in In re Rouffet, 143 F.3d 1350, 47 USPQ 2d 1453 (Fed.Cir. 1998) held that virtually all inventions are combinations of old elements. Therefore, an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue.

To prevent the use of hindsight based on the invention to defeat patentability of the invention, the Court requires the examiner to show a motivation to combine the references that create obviousness. That is, the examiner must show reasons why the skilled artisan, when confronted with the same problem as the inventor and with no knowledge of the claimed

invention, would select the elements of the cited prior art references for combination in the manner claimed.

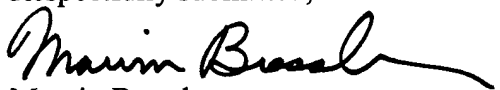
This test exposes the fallacy of the applied rejection. No skilled artisan would select a sulfuric acid to hydrogen peroxide solution having the ratio claimed in Fleming et al. to supplement the admitted inadequacy of Kim et al., as established by the application of Fleming et al., to prevent tungsten etching in a CMOS device having a tungsten gage conductor, because Fleming et al. does not employ the solution to clean any device that so much as includes tungsten.

The rejection is thus an example of a practice deemed unacceptable by the CAFC. The outstanding rejection has selected an element of the claimed process, a cleaning solution, although that cleaning solution is not used in a process of the type claimed in the present application. It is important to appreciate that it is not the cleaning solution which is the subject of the present application. The present invention is directed to a process of cleaning a CMOS device which is provided with a tungsten gate conductor. The prior art, exemplified by the combined teaching of Kim et al. and Fleming et al., provides no prima facie case of obviousness of that process, as set forth in Claims 1 and 4-9 of the present application.

The above remarks establish that the combined teaching of the applied references does not make obvious any of the claims of the present application. Reconsideration and removal of this ground of rejection is therefore deemed appropriate. Such action is respectfully urged.

The above remarks establish the patenable nature of all the claims currently in this application. Notice of Allowance and passage to issue of these claims, Claims 1 and 4-9, is therefore respectfully solicited.

Respectfully submitted,



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